IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND

MIKE'S TRAIN HOUSE, INC.,	*	
Plaintiff	*	
v.	*	**CIVIL NO. JKB-09-2657**
BROADWAY LIMITED IMPORTS, LLC, *et al*.,	*	
	*	
Defendants	*	

* * * * * * * * * * * *

MEMORANDUM

Mike's Train House, Inc. ("Plaintiff") brought this suit against Broadway Limited Imports, LLC ("BLI") for alleged infringement of U.S. Patents Nos. 6,457,681 ('681) and 6,655,640 ('640), and against Robert Grubba ("Grubba") for allegedly inducing BLI's infringement. (Am. Compl. 16-18, ECF No. 95). Both sides have now moved for summary judgment. Additionally, Plaintiff has moved to strike certain of Defendants' witness declarations and for sanctions against Defendants for alleged discovery violations. The issues have been briefed and no oral argument is required. Local Rule 105.6. For the reasons set forth below, Plaintiff's Motion for Summary Judgment (ECF No. 126) is DENIED IN PART (as to infringement) and DENIED AS MOOT IN PART (as to invalidity), Defendants' Motion for Summary Judgment (ECF No. 133) is GRANTED IN PART (as to literal infringement), DENIED IN PART (as to infringement under the Doctrine of Equivalents), and DENIED AS MOOT IN PART (as to invalidity), Defendants' Counterclaim for Declaratory Judgment of Invalidity (ECF No. 100) is DISMISSED, and Plaintiff's Motion to Strike and for Sanctions (ECF No. 136) is DENIED.

I. BACKGROUND

Plaintiff and Defendants are direct competitors in the design and sale of model trains. (Pl.'s Am. Resp. 1, ECF No. 82). Plaintiff holds the rights to two patents, '681 and '640, which are directed to an electronic system for synchronizing the sound, smoke, and wheel rotation on model trains using a microprocessor. *Id* at 2. Plaintiff alleges that Defendants infringed these patents by intentionally copying the technology and selling trains using a similar system. *Id* at 2-3. Specifically, Plaintiff alleges literal infringement of Claims 4 and 5 of the '681 patent and 1, 2, and 6-14 of the '640 patent. (Pl.'s Mem. Summ. J., ECF No. 127, SEALED). Defendants contend that the accused trains lack at least one required element of each of the asserted claims and are therefore not infringing. (Defs.' Mem. Summ. J., ECF No. 133). They further argue that certain of the asserted claims are invalid for obviousness, and have filed a counterclaim against Plaintiff for a declaratory judgment of invalidity (ECF No. 100). Plaintiff and Defendants have each now moved for summary judgment on the issues of infringement and invalidity. Additionally, Plaintiff has moved to strike certain of Defendants' witness declarations, which it alleges were filed in violation of the rules governing expert discovery. (Pl.'s Mot. Strike, ECF No. 136). Plaintiff also seeks sanctions against Defendants for these alleged discovery violations. (*Id*).

II. LEGAL STANDARD

Federal Rule of Civil Procedure 56(a) directs district courts to grant summary judgment if the moving party shows "that there is no genuine dispute as to any material fact" and that it is "entitled to judgment as a matter of law." If the moving party carries this burden, then summary judgment will be denied only if the opposing party can identify specific facts, beyond the allegations or denials in the pleadings, that show a genuine issue for trial. Fed. R. Civ. P.

56(e)(2). To carry these respective burdens, each party must support its assertions by citing particular parts of materials in the record constituting admissible evidence. Fed. R. Civ. P. 56(c)(1)(A). The court will then assess the merits of the motion, viewing all facts and reasonable inferences in the light most favorable to the opposing party. *Scott v. Harris*, 550 U.S. 372, 378 (2007); *Iko v. Shreve*, 535 F.3d 225, 230 (4th Cir. 2008).

III. ANALYSIS

A. Infringement[1]

Plaintiff seeks summary judgment that the accused trains literally infringe Claims 1, 2, and 6-13 of the ‘640 Patent. Defendants seek summary judgment that the accused trains do not infringe these claims and, further, that they do not infringe Claims 4 and 5 of the ‘681 Patent or Claim 14 of the ‘640 Patent.[2] Infringement analysis is a two-step process. *Tessera, Inc. v. Int’l. Trade Comm’n.*, 646 F.3d 1357, 1364 (Fed. Cir. 2011). “First, the claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process.” *Board of Regents of the University of Texas System v. BENO America Corp.*, 533 F.3d 1362, 1367 (Fed. Cir. 2008) (internal quotation marks and citation omitted). “To prove literal infringement, the patentee must show that the accused device contains every limitation in the asserted claims.” *Mas–Hamilton Grp. v. LaGard, Inc.,* 156 F.3d 1206, 1211 (Fed. Cir. 1998).

The asserted claims and the Court’s construction thereof are as follows.[3]

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[1] Although the Court does not rule on Plaintiff’s motion to strike Defendants’ new witness declarations, in the interest of the economy of this opinion the Court does not rely on the declarations in its infringement analysis.

[2] Defendants seek summary judgment that their products do not infringe these claims, either literally or under the Doctrine of Equivalents. However, Plaintiff has made clear that it alleges only literal infringement. Since the Doctrine of Equivalents is not at issue in this case, the Court cannot enter judgment on its application to the asserted claims or the accused products. Defendants’ motion for summary judgment on the issue of infringement under the Doctrine of Equivalents will therefore be denied.

[3] Terms that have been construed by the Court or by stipulation of the parties appear in *italics*. The first appearance of each construed term is followed by a footnote containing the construction.

'681:4 A model train control system for controlling model trains on a train track layout, comprising:

a track interface unit coupled to said train track layout;
a remote control unit for communicating with the track interface unit; and
a model train comprising:

a processor;
a *speed control circuit*;[4]
a sound system circuit; and
a smoke unit;

wherein a *speed command*[5] entered on the remote control unit is communicated to the track interface unit, which passes the command to the model train via rails on the train track layout, the processor in the model train receiving the command and in turn commanding the *speed control circuit* to drive the model train to a speed indicated in the *speed command*, the processor further (1) controlling the sound system circuit to play sounds corresponding to the model train speed, and (2) controlling the smoke unit to produce smoke corresponding to the model train speed.

'681:5 The model train control system of claim **4**, wherein as the speed of the model train increases, the sound system circuit plays train operation sounds which simulate a train moving at an increased speed, and the smoke unit produces an increased amount of smoke.

'640:1 A model train responsive to commands in the form of data bit sequences, comprising:

a *speed control circuit*;

a processor which receives one of said commands corresponding to a *desired speed*[6] of said train and commands said *speed control circuit* to drive said train to said *desired speed*;

a sound system circuit for playing sounds that simulate real-life train operation sounds; and

a smoke unit for producing smoke from the model train;

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[4] "a closed loop motor control which (1) has knowledge of the current speed command; (2) monitors the actual speed of the model train over the track; and (3) controls the train's motor to drive the actual speed of the model train over the track to match the speed command despite variations in load." (Memorandum Opinion at 10, ECF No. 105).

[5] "a user input corresponding to an actual desired speed of the train over the track (in scale miles per hour or other units of speed)." (Joint Claim Construction Statement at 4, ECF No. 71).

[6] "a user input corresponding to an actual desired speed of the train over the track (in scale miles per hour or other units of speed)." (Joint Claim Construction Statement at 4, ECF No. 71).

wherein the *speed control circuit* monitors the speed of the model train and provides the speed to the processor, which then controls the sound system circuit and smoke unit such that the train operation sounds and the smoke correspond to the speed of the model train.

'640:2. The model train of claim **1**, wherein as the speed of the model train increases, the sound system circuit plays train operation sounds which simulate a train moving at an increased speed, and the smoke unit produces an increased amount of smoke.

'640:6. A model train responsive to commands in the form of data bit sequences, comprising: a processor which receives said commands, a smoke system driver circuit coupled to said processor, and a smoke unit coupled to said smoke system driver circuit, wherein said processor controls said smoke system driver circuit so that said smoke unit outputs a volume of smoke based on the model train's speed.

'640:7 The model train of claim **6**, wherein said the volume [sic] of outputted smoke changes when the model train's load changes.

'640:8 The model train of claim **6** further comprising a sound system circuit coupled to said processor, wherein said processor controls said sound system circuit so that the sound system circuit outputs sounds based on the model train's speed.

'640:9 The model train of claim **8**, wherein the outputted sounds change when the model train's load changes.

'640:10 The model train of claim **9**, wherein the volume of outputted smoke changes when the model train's load changes.

'640:11 The model train of claim **10**, wherein the outputted sound is a chuff sound and the smoke is outputted in puffs.

'640:12 The model train of claim **11**, wherein the chuff sounds and the puffs of smoke correspond to the speed of the train.

'640:13 The model train of claim **12**, wherein as the model train's load changes, there is a corresponding change in the chuff sounds and the puffs of smoke.

'640:14 A model train responsive to commands in the form of data bit sequences, comprising:

> a processor which receives *desired speed commands*, a sound system circuit coupled to said processor, and a speed sensing circuit coupled to said processor, wherein the processor controls the sound system circuit to output sounds based on a signal received from the speed sensing circuit indicating the model train's speed, the processor controls the model train to match the *desired speed* and controls the sound system circuit to change the outputted sounds as the model trains speed changes

1. Claims '681:4-5 & '640:1-2, 14

Claims 1, 2, and 14 of the '640 Patent and Claims 4-5 of the '681 patent all describe a model train that accepts *speed commands* from a user. As noted above, the parties have agreed that the term *speed command* (as well as *desired speed*) means "a user input corresponding to an actual desired speed of the train over the track (in scale miles per hour or other units of speed)." (Joint Claim Construction Statement at 4, ECF No. 71). Defendants contend, *inter alia*, that the accused trains cannot accept a user input that "corresponds" to an actual train speed. The Court agrees.

The mechanics of the speed control mechanism in the accused trains are described in some detail in the deposition testimony of Marty Pierson, who designed the system for Defendants. Since both parties have cited Mr. Pierson's testimony on this subject in support of their arguments for summary judgment, the Court finds that there is no dispute as to the accuracy of his description. Therefore, the Court reproduces the relevant portions of that testimony here in order to provide a basis for the following infringement analysis.

> Q Okay. My understanding is that there is a circuit on the printed circuit board in the BLI trains that is used to sense the voltage that comes off the motor in the train. Is that accurate?
>
> A There is a circuit that can read the motor voltage, yes.
>
> …
>
> Q Okay. What's the purpose of that circuit?

A The purpose of that circuit is to read the back EMF supplied by the motor.

Q Why do you want to read the back EMF supplied by the motor?

A The back EMF is proportional to the speed of the motor.

Q Does the speed of the motor correspond to the speed of the train?

A There is a relationship, yes.

Q Are you aware of what that relationship is?

A Certainly.

Q What is it?

A Well, it varies from train to train. You use the speed of the motor to control the speed of the train. There's a gear ratio between the motor and the wheels and, of course, there is the wheel diameter and all those have to be taken into account to give you the relationship between the back EMF and the speed, which is linear proportional.

Q Speed of what?

A Speed of the train.

Q Speed of the train.

A Yes.

Q … Does the microprocessor use that back EMF information?

A It does to maintain constant speed running curves, up hills and down hills.

Q How does the processor accomplish that?

A In DCC, you have user inputted speed tables or you may just use a linear curve, and in this case it's a linear line. So it's an arbitrary speed that each speed is set at.

So if you have point A and point B, you have a line slope, the user can tip that any way they want. And then if you have your speed steps that the user has speed step 1, 2, 3, 4, 5, it's on that line, and there is some arbitrary speed. I have no idea what it is. It is what it is based on the line function.

Q Is there an algorithm in the code that the processor executes that uses that back EMF information in order to calculate the current speed of the train?

A If it's linear, then it's Y equals MX plus B, the standard slope of the line. So you just employ that algorithm.

Q So, just to be clear, the answer to my question would have been yes?

A … Yes.

Q In some instances it might be linear you said?

A Saying something is linear is not very accurate because the back EMF is supposed to be proportional; it's not. So it's not going to be straight linear. It's going to be some function, scattered function, if you like. You can take a scattered function and make it linear by superimposing a function over it. But you are not going to go from 1 to 2 to 3 to 4 and get one scale, two scale and three scale. You are going to get who knows what. And every train is going to be different.

Q Sure.

A Try to match two trains, the speeds. That's why DCC has all these things you can tweak trying to make them match, because none of them match.

Q Let's assume then that the user has chosen a speed step. My understanding is that the processor will receive that information and will command the motor to reach a certain speed so that that corresponds to what the user selected. Is that accurate.

A What the algorithm will do is it will say the user requested a certain speed step, that translates into a back EMF voltage, and it will make that motor produce that back EMF. Whatever speed that happens to be is the speed it will be. So it's back EMF based. That's your driver, you are trying to match it.

Q Does the processor then continually monitor the back EMF voltage?

A It does.

Q And one of the reasons it does that is in order to try to ensure that the train maintains the constant speed that was selected?

A Correct.

Q And if the train begins to go up a hill, for instance, the processor will sense the change in the back EMF voltage, correct?

A Correct, it will fall.

Q And then will it send a command to the motor to increase the voltage?

A It increases the power.

(Pierson Dep. 24:11-28:16).

Based largely on this testimony, Defendants argue that the accused trains do not accept *speed commands* because the exact speed resulting from any given speed step on a given train is, in Pierson's words, "arbitrary." Therefore, they conclude, a speed step does not "correspond" to an actual speed of the train over the track. The Court agrees. According to Mr. Pierson's un-contradicted testimony, when a user selects a speed step for an accused train, the train's processor correlates the speed step with a particular level of back EMF and then adjusts power to the motor until it produces that level of back EMF. Pierson further explains that there is a direct correlation between back EMF and the speed of the motor. Finally, he explains that there is also a relationship between motor speed and the speed of the train over the track, *but* that the exact relationship depends on other variables such as gear ratio and wheel diameter. Thus, a given speed step may cause an accused train to travel at one speed over the track under some conditions and a different speed under other conditions (say if the wheels on the train are changed). Therefore, there is no fixed relationship between a particular speed step and an actual speed of the train over the track. It is thus inaccurate to say that a speed step "corresponds" to an actual speed of the train. Rather, a given speed step and a given actual speed can be made to coincide with one another (or not) by manipulating other variables; there is no inherent connection between them.

Plaintiff mounts several arguments against this conclusion. First, Plaintiff alleges that Defendants have previously represented to this Court and to the PTO that the accused trains do support *speed commands*, and argues that Defendants are therefore judicially estopped from

claiming otherwise now. The Court finds this argument unpersuasive for two reasons. First, it is not obvious to the Court that Defendants' current position is incompatible with their previous statements. The allegedly inconsistent statements that Plaintiff cites are mostly arguments by Defendants that the prior art (specifically the NMRA DCC Protocol and the Ames Book) disclose every claim and limitation of the asserted patents, including *speed commands* and a *speed control circuit*. Defendants made these arguments in their opposition to Plaintiff's previous motion for preliminary injunction and in their request for *ex parte* reexamination in the PTO. Both of these events, however, occurred before the parties submitted their joint claim construction statement to the Court, which included the construction of *speed command* on which Defendants base their current arguments. It is not clear from Defendants' previous statements that they asserted specifically that the prior art disclosed a *speed command* as the parties would later construe that term, i.e., to require that the user input correspond to an actual speed of the train over the track. For example, Plaintiff cites Defendants' previous statement that "the DCC communication protocol includes a command for setting the desired speed of a model train. This is known as the 'speed step command.'" (Def.'s Resp. Prelim. Inj. at 17, ECF No. 21). *Desired speed*, however, unless construed as a matter of law, is highly ambiguous. It could easily be understood, for example, to mean whatever speed a train happens to go at half-maximum power, which is precisely what the DCC protocol allows, and which is different from an "actual speed of the train over the track." The Court is therefore not convinced that Defendants' current position represents an about-face from their previous positions.

Furthermore, even if Defendants' arguments in the instant motion were in complete contradiction to their previous statements to the Court and the PTO, the law of estoppel still

would not bar them from making those arguments now. In the Fourth Circuit,[7] application of judicial estoppel requires that three conditions be met: (1) the party to be estopped must be asserting a position that is factually incompatible with a position taken in a prior judicial or administrative proceeding; (2) the prior inconsistent position must have been accepted by the tribunal; and (3) the party to be estopped must have taken inconsistent positions intentionally for the purpose of gaining unfair advantage. *King v. Herbert J. Thomas Memorial Hosp.*, 159 F.3d 192, 196 (4th Cir. 1998). Here, the second element is missing. Plaintiff claims that Defendants previously argued the opposite of their current position in their opposition to Plaintiff's Motion for Preliminary Injunction. However, in ruling on that motion, the Court did not "adopt" Defendants' position with regard to *speed commands*. Rather, it denied the motion on the grounds that Plaintiff had failed to meet its burden of proof with regard to irreparable harm. (Memorandum Opinion at 9, ECF No. 50). Plaintiff also claims that Defendants argued the opposite of their current position to the PTO in reexamination and succeeded in obtaining a first office action holding all the asserted claims invalid. For purposes of estoppel, however, "acceptance" means that "the first court [or agency] has adopted the position urged by the party… as part of a final disposition." *Lowery v. Stovall*, 92 F.3d 219, 224 (4th Cir. 1996). Here, the reexamination proceedings before the PTO are not, technically, even final, but the PTO's latest written opinions reject Defendants' arguments. (PTO Communications, ECF Nos. 128-7 & 128-8).

Next, Plaintiff argues that even if Defendants are not estopped, the evidence plainly shows that the accused trains support *speed commands*. The Court disagrees. First, Plaintiff cites a number of statements from Defendants' own witnesses as well as the prior art to the effect

[7] Judicial estoppel is not an issue unique to patent law, and district courts therefore apply the law of their own regional circuits rather than the Federal Circuit. *See Biomedical Patent Mgmt. Corp. v. California Dep't of Health Servs.*, 505 F.3d 1328, 1341 (Fed. Cir. 2007).

that the DCC standard allows “speed control” of the trains (e.g., Grubba’s deposition testimony that the accused trains can execute a half-maximum speed command). These statements, however, do not raise any material issue of fact as to whether the accused trains have the specific form of speed control described in the asserted claims.

Next, Plaintiff cites two of Defendants’ advertisements. The first reads: “Integral DCC Decoder with Back EMF for Industry Best Slow Speed Operation in DC and DCC *(1 smph @ 128 Speed Steps)*.” (Hybrid Advertisement, ECF No. 128-11, Ex. 11). The second reads: “**Extreme Slow Speed Control in DC and DCC.** Whether operating in DCC or with any DC transformer, Paragon2 equipped locomotives will maintain speeds as low as ½ scale MPH, even pulling a load, up and down hills, around curves and through turnouts. (BLI 2010 Product Guide at 4, ECF No. 128-10, Ex. 10). The Court is unsure what the alleged import of these statements is, but they certainly do not indicate a fixed relationship between a speed step and an actual speed.

Next Plaintiff cites two reviews of the accused trains in the model train publication *Model Railroader*. The first shows a table listing the following speeds in scale mph for four different speed steps: Speed Step 1 – 1.5 Scale mph; Speed Step 14 – 15 Scale mph; Speed Step 21 – 49 Scale mph; Speed Step 28 – 70 Scale mph. (*Model Railroader* Review No. 1, ECF No. 141-10, Ex. 24). The second contains the statement “On DCC, the Decapod began moving on speed step 1 at 1 scale mph, reached 15 scale mph at step 14, and ran 54 scale mph at full throttle.” (*Model Railroader* Review No. 2, ECF No. 145-1, Ex. 25). This evidence, however, merely reinforces the Court’s original conclusion by confirming that different accused trains travel at different speeds at the same speed step. In this example, one train could reach only 54 scale mph at full throttle, while another could go as fast as 70 scale mph.

Next, Plaintiff cites the Technical Reference Manual for the accused trains, which explains how each speed step corresponds exactly to a particular motor speed. (Paragon2 Steam Technical Reference Manual at 81, ECF No. 128-6). This fact, however, was already established in Pierson's testimony. As he explained, motor speed is not train speed, and the relationship between the two depends on several variables that may or may not be known to the processor.

Finally, Plaintiff cites the Operator's Manual of the accused trains, which instructs the user on how to adjust the train's settings so that its speed at any given speed step matches the speed of another train at the same speed step. (Operator's Manual at 20-23, ECF No. 128-16, Ex. 16). Again, this simply proves that the speed steps have no fixed relationship to any actual speed.

Plaintiff's final argument is that if the back EMF-based speed control mechanism in the accused trains is not covered by the asserted claims, then certain embodiments of the *speed control circuit* disclosed in the patent specification, which also use back EMF, would also not be covered by those claims. Plaintiff cites the following text from the '640 patent describing the use of back EMF to measure train speed.

> Alternatively, the speed can be measured by sensing the per-revolution variation in motor current due to the self-communication. Communication causes an instaneous [sic], measurable change in current (sensed as a feedback pulse) as windings move to the next brush in motors. This occurs a fixed number of times per motor revolution. Since the communication sequence repeats with each revolution, there is a discrete number of feedback pulses per revolution, which in essence, is an odometer. The processor **200** can sense the motor current through a sense resistor (not shown) and algorithmically estimate the speed. The back-emf of the motor **2072** can optionally be simultaneously sensed to improve the estimate. The advantage of this speed sensing method is that it can be retro-fitted without modifying the motor mechanical assembly; as such, it is compatible with existing motors.

('640 Patent at col.22:33-49, ECF No. 128-2, Ex. 2). A construction of a claim that would exclude examples disclosed in the patent's specification is almost always improper. *See Verizon*

Services Corp. v. Vonage Holdings Corp., 503 F.3d 1295, 1305 (Fed. Cir. 2007)("We normally do not interpret claim terms in a way that excludes disclosed examples in the specification.")(citations omitted). The Court does not find, however, that anything in the cited embodiment would be excluded from the coverage of the asserted claims under Defendants' interpretation of the *speed command* or *speed control circuit* limitations. Defendants do not argue, as far as the Court can tell, that the asserted claims do not cover the use of back EMF to gauge the speed of the train, which is all the cited embodiment discloses.[8] Rather, Defendants' argument (and the Court's ruling on this issue) is based on the lack of a fixed correlation between a user input and an actual speed of the train. It is entirely plausible that a model train that uses back EMF to measure speed, just as described in the cited embodiment, could also consistently match a user's speed command to an actual train speed (as opposed to simply matching one level of back EMF to another). Such a train would be covered by the asserted claims even under Defendants' interpretation of the *speed command* and *speed control circuit* limitations. Therefore, nothing in Defendants' arguments on this issue would exclude the cited embodiment from coverage.

For these reasons, the Court finds that Plaintiff has adduced no evidence that could allow a reasonable jury to find that the accused trains accept *speed commands* as construed by the parties in this case. There is therefore no dispute of material fact as to this issue and Defendants are entitled to judgment as a matter of law. The Court will therefore enter summary judgment that the accused trains do not literally infringe Claims 4-5 of the '681 patent or Claims 1, 2, or 14 of the '640 patent. Plaintiff's motion for summary judgment as to these claims will be denied, and Defendants' motion for summary judgment as to these claims will be granted in part (as to literal infringement) and denied in part (as to infringement under the Doctrine of Equivalents).

[8] To the extent (if any) that they do so argue, the Court makes no finding on that issue.

2. Claims ‘640:6-13

Defendants next contend that each asserted claim, except for **‘640:14,** describes a model train that varies its smoke output based on the speed of the train. They argue that the accused trains do not infringe these claims because they vary smoke output based on the load on the motor, which is related to but different from the speed of the train. In support, Defendants offer the following evidence.

First, Defendants cite the following testimony from the deposition of Marty Pierson:

> Q Right. My understanding is also that in that circumstance where the motor is working harder, the processor can signal the smoke unit to increase the amount of smoke that’s produced, corresponding to the locomotive working harder, right?
>
> A That is correct.

(Pierson Dep. at 52, ECF No. 128-12).

Second, Defendants cite similar testimony from Grubba’s deposition:

> Q … What input does the microprocessor that controls the motor in the smoke unit receive that adjusts the amount of smoke that is output?
>
> A It gets information from several different places. To adjust the heat of the heater element, it uses percent duty cycle. And again, Marty Pierson could probably give you a more accurate description of how this works, this is what he does. And then for the timing of the smoke, the motor is turned on and off and that uses a mechanical sensor that is a magnet that’s on the drive mechanism. And the magnet activates a magnetic reed switch that sits up next to the flywheel so that when it spins, the magnet trips the reed switch and then when that reed switch trips, it sends a signal to the processor and the processor sends the signal out to make the smoke unit puff which is achieved by turning the fan motor on for a short period of time.
>
> Q Okay. When you started that answer you referred to the microprocessor knowing the percent duty cycle, right?
>
> A Uh-huh.
>
> Q Percent duty cycle of what?
>
> A That’s the percent of the available power that’s sent to the motor, to the

drive motor for the locomotive, not to the smoke unit motor.

(Grubba Dep. at 89-90, ECF No. 128-9).

Finally, Defendants cite the following passages from the report of Plaintiff's own expert, Mr. Niederlander:

> **Test 8 - …**
>
> When voltage (electricity) is applied to a heater resistor, it warms up in proportion to the amount voltage [sic] applied to it. The heater resistor contacts a smoke-generating fluid, which vaporizes when the resistor reaches a certain temperature. Thus, the voltage across the resistor determines the amount (volume) of smoke produced by the smoke unit. Increasing or decreasing the voltage across the resistor increases and decreases, respectively, the amount of heat generated by the resistor, which increases and decreases, respectively, the amount of smoke generated.
>
> …
>
> I… set the speed control setting on the controller to a value of 75% while holding the tender so that the wheels would slip on the track. I visually observed the volume of smoke coming from the locomotive and the frequency and tone of the chuffing sound. … The graphical output of channel 1 shows that the average smoke heater voltage was 7.92 VRMS. …
>
> **Test 9 –** Next, I simulated an increased load on the locomotive by pressing down on the flywheel of the motor. While pressing on the flywheel the speed of the [sic] remained the same due to the speed control. … after a few seconds, the volume of smoke changed (increased) because of the additional load, and the sound frequency and tone also changed. … Under these conditions, the graphical output of channel 1 shows that the average voltage across the smoke heater voltage [sic] increased from 7.92 Vrms to 9.36 Vrms. The increase in voltage indicates that a greater volume of smoke was being generated under the increased load, which I visually confirmed.

(Niederlander Report at 30-31, ECF No. 138-2, SEALED).

In rebuttal, Plaintiff offers the following evidence that the accused trains *do* vary smoke volume on the basis of speed.

First, Plaintiff cites the following testimony from Marty Pierson's deposition:

> Q. My understanding is that in the accused trains, the puffing smoke can be synchronized to the speed of the train, correct?

> A. It can be.

(Pierson Dec. at 35:21-36:2).

Second, Plaintiff cites Defendants' response to Plaintiff's first Request to Admit:

> **<u>Request to Admit No. 1</u>:**
>
> Admit that Broadway Limited's trains with the Paragon 2 Sound System and smoke feature use a microprocessor to synchronize the sound, speed and smoke features.
>
> **<u>Response to Admissions</u>:**
>
> No. 1: Admit.

(Def.'s Resp. to Pl.'s First Requests for Admission, ECF Nos. 128-3 & 128-4).

Third, Plaintiff cites the following testimony from Grubba's deposition:

> Q. How does the smoke unit in the accused Broadway Limited trains achieve the puffing phenomenon?
>
> A. The fan is turned on, smoke blows out, the fan is turned off.
>
> Q. Is it fair to say that fan is turned rapidly on and off to achieve the puffing?
>
> A. Sometimes it's not rapid. It's depending upon the speed of the train.

(Grubba Dep. 88:23-89:5).

Finally, Plaintiff cites the following review of the accused trains in the model train publication, *Model Railroader*:

> More noticeably at slow speed, the puffing smoke is synchronized with the motion of the drivers, as is the correct sound of four chuffs per driver revolution. At high speed, the model pours smoke from the stack, leaving a visible white cloud…

MTH Exhibit 27 (*Model Railroader* review of accused BLI train).

Based on this record, the Court finds that there is no material dispute of fact with respect to the basis on which the accused trains vary the volume of smoke they emit. The only concrete

evidence of the mechanism by which the trains vary the volume of outputted smoke is Mr. Niederlander's expert report, which clearly demonstrates that the volume of smoke varies according to the load on the train's motor and not its speed over the track. Although this evidence is not overwhelming, it is sufficient to entitle Defendants to summary judgment on this issue because Plaintiff, who has the ultimate burden of proving infringement, has offered no evidence at all that tends to refute it. The statements cited by Plaintiff evince only that the *rate of puffing* varies according to the speed of the train or that the volume of smoke sometimes varies at the same time and in the same direction as the speed of the train because the speed and the load on the motor happen to be changing in the same direction at the same time.

Applying this factual finding to the asserted claims, the Court further finds that the accused trains do not literally infringe Claims 6-13 of the '640 patent. Claim 6 literally describes a train that "outputs a volume of smoke based on the model train's speed." The accused trains do not meet this requirement. Because claims 7-13 are dependent on Claim 6, the trains also lack a required element of each of those claims. Plaintiff's motion for summary judgment as to these claims will therefore be denied, and Defendants' motion for summary judgment as to these claims will be granted in part (as to literal infringement) and denied in part (as to infringement under the Doctrine of Equivalents).

B. Invalidity

Plaintiff and Defendants both initially moved for summary judgment on Defendants' counterclaim for a declaratory judgment of invalidity (ECF No. 100), though Defendants subsequently withdrew their motion. Jurisdiction to enter a declaratory judgment depends upon the existence of an actual controversy between the parties. 28 U.S.C. § 2201(a). No such controversy any longer exists between Plaintiff and Defendants as to the asserted claims because

the Court has found that the accused trains do not literally infringe those claims and because any theory of infringement under the Doctrine of Equivalents unquestionably could have been raised by Plaintiff in this suit and is therefore *res judicata*. *See King Pharmaceuticals, Inc. v. Eon Labs, Inc.*, 616 F.3d 1267, 1282-83 (Fed. Cir. 2010)(citing cases dismissing declaratory judgment counterclaims where plaintiffs withdrew or gave up claims of infringement); *San Remo Hotel, L.P. v. City and County of San Francisco,* 545 U.S. 323, 336 n.16 (2005) ("[U]nder res judicata, a final judgment on the merits of an action precludes the parties or their privies from relitigating issues that were or could have been raised in that action.")(internal quotation marks and citation omitted). The Court will therefore dismiss Defendants' counterclaim for lack of subject matter jurisdiction and both sides' motions for summary judgment on the counterclaim will be denied as moot.

C. Motion To Strike

Because the Court has determined that Defendants are entitled to summary judgment without the aid of the disputed declarations, Plaintiff's motion to strike and for sanctions will be denied as moot.

IV. CONCLUSION

Accordingly, an Order shall enter DENYING IN PART (as to infringement) and DENYING AS MOOT IN PART (as to invalidity) Plaintiff's Motion for Summary Judgment (ECF No. 126), GRANTING IN PART (as to literal infringement), DENYING IN PART (as to infringement under the Doctrine of Equivalents), and DENYING AS MOOT IN PART (as to invalidity) Defendants' Motion for Summary Judgment (ECF No. 133), DISMISSING Defendants' Counterclaim for a Declaratory Judgment of Invalidity (ECF No. 100), and DENYING AS MOOT Plaintiff's Motion to Strike and for Sanctions (ECF No. 136).

Dated this 31st day of October, 2011

BY THE COURT:

/s/
James K. Bredar
United States District Judge